Engineering Design and Development
Course Code: 21007

Rationale Statement:
Engineering Design and Development is a second level course in engineering technology. Students are engaged in an instructional program that integrates academics and technical preparation and focuses on career awareness. The course outline for Engineering Design and Development could be used as an outline for a senior experience. This course is designed to provide the student with an engaging opportunity to design, innovate and develop technological artifacts (products). This course will prepare students for direct entry into a career, advanced educational opportunities, and lifelong learning.

Suggested Grade Level: 11-12

Topics covered:
- Problem Solving
- Conducting Research
- Analyzing Criteria
- Analyzing Research
- Decision Making
- Creating a Product
- Product Testing
- Communication
- Writing

Core Technical Standards & Examples

Indicator #1: Identify a technologically related problem	
Bloom's Taxonomy Level	**Standard and Examples**
Analyzing	**EDD.1.1 Examine current state of a problem** *Example:* - Perform a needs assessment to determine relative importance of the problem - List pros and cons of a current problem - Compare current problem to similar problems
Applying	**EDD.1.2 Research solution options to solve the problem**

Bloom's Taxonomy Level	Standard and Examples
	Example: • Brainstorm possible solutions • Explore other options via the Internet, library, interviews, etc. • Conduct research by interviewing industry professionals
Applying	**EDD.1.3 Propose new solutions to solve the problem** *Example:* • Present a design plan • Formulate a course of action to solve the chosen problem • Discuss solution ideas with team members
Knowledge	**EDD.1.4 Identify the best solution** *Example:* • List the pros and cons of each solution • Discuss and analyze potential solutions • Select the best solution

Indicator #2: Construct a prototype of the solution to the problem

Bloom's Taxonomy Level	Standard and Examples
Applying	**EDD.2.1 Construct a prototype to model solution** *Example:* • Sketch a prototype of their product • Communicate product specifications • Construct product according to specifications
Applying	**EDD.2.2 Test the prototype for effectiveness** *Example:* • Create a product for safety testing • Collect data on prototype tests • Analyze the data for prototype effectiveness

Indicator #3: Analyze test data results for prototype performance

Bloom's Taxonomy Level	Standards and Examples
Applying	**EDD.3.1 Analyze test results**

Bloom's Taxonomy Level	Standards and Examples
	Example: • Evaluate product performance data • Chart and graph data • Write a reflection on the test results
Applying	**EDD.3.2 Make decisions based on test result data** *Example:* • Identify performance needs • Theorize on product improvements • Develop concept models based on data results
Applying	**EDD.3.3 Redesign the product to meet performance needs** *Example:* • Sketch changes made to prototype • Summarize findings of prototype performance • Apply changes to the prototype

Indicator #4 Communicate solution(s) and the prototype for others	
Bloom's Taxonomy Level	**Standards and Examples**
Applying	**EDD.4.1 Communicate solutions for the product** *Example:* • Create a presentation of the final product for potential clients • Write a report for potential clients • Modify final product options to meet client demand